1. A process for depositing a tungsten silicide film on a substrate comprising:
depositing a nucleation layer of tungsten silicide (WSi_x) on the substrate using a (CVD) process with a silane (SiH_4) silicon source gas and a reactant gas; and depositing a film of tungsten silicide (WSi_x) on the nucleation layer using a (CVD) process by switching to dichlorosilane (SiH_2Cl_2) as a silicon source gas such that the dichlorosilane gas reacts with the reactant gas to form the tungsten silicide film at a temperature of less than about 500°C.

2. The process as recited in claim 1 and wherein:
a reactant gas for reaction with the silane and the dichlorosilane is tungsten [hexaflouride] hexafluoride (WF_6).

3. The process as recited in claim [2] 1 [and wherein] further including:
[the (CVD) process is carried] carrying out the (CVD) process in a cold wall (CVD) reaction chamber.

4. The process as recited in claim [3] 1 [and wherein] further including:
[the (CVD) process is carried] carrying out the (CVD) process at a temperature of about 400°C. or less.

5. The process as recited in claim [4] 1 and wherein:
the nucleation layer is formed with discontinuities or to a very thin thickness on the substrate.

6. The process as recited in claim [5] 1 [and wherein] further including:
[a premix chamber is used to mix] mixing the silane or dichlorosilane silicon source gas, the reactant gas and a carrier gas in a premix chamber.

7. The process as recited in claim 6 and wherein:
a flow rate of the carrier gas is about five to ten times a flow rate of the silane or dichlorosilane silicon source gas.

8. A semiconductor manufacturing process for depositing a tungsten silicide film on a substrate comprising:
depositing a thin or discontinuous nucleation layer of tungsten silicide (WSi_x) on the substrate using a (CVD) process and reacting a silane (SiH_4) silicon source gas with a reactant gas in a CVD system having a premix chamber for combining the silicon source gas and the reactant gas; and
depositing a film of tungsten silicide (WSi_x) on the nucleation layer using a (CVD) process by switching to dichlorosilane (SiH_2Cl_2) as a silicon source gas such that the dichlorosilane gas reacts with the reactant gas to form the tungsten silicide film at a temperature of less than about 500°C.

9. The semiconductor manufacturing process as recited in claim 8 and wherein:
the reactant gas is tungsten hexafluoride (WF_6).

10. The semiconductor manufacturing process as recited in claim [9] 8 [and wherein] further including:
[the (CVD) process is performed] performing the (CVD) process in a cold wall (CVD) system.

11. The semiconductor manufacturing process as recited in claim 10 and wherein:
the cold wall (CVD) system includes the premix chamber, a reaction chamber, a graphite boat for holding a plurality of silicon wafers, and means for heating the silicon wafers.

12. The semiconductor manufacturing process as recited in claim [11] 8 and wherein:
the substrate is silicon wafers and the wafers are heated to a temperature of between 200° to 500°C.

13. The semiconductor manufacturing process as recited in claim [12] 8 and wherein:
deposition of the nucleation layer occurs in about 1 to about 25 seconds.

14. The semiconductor manufacturing process as recited in claim [13] 8 and wherein:
a carrier gas includes a mixture of Argon, Nitrogen, and Helium.

15. The semiconductor manufacturing process as recited in claim 14 and wherein:
a flow rate of the silane silicon source gas is about 400 sccm;
a flow rate of the reactant gas is about 4 sccm; and
a flow rate of the carrier gas is about 2800 sccm.

16. The semiconductor manufacturing process as recited in claim 1 and wherein:
said depositing said nucleation layer of tungsten silicide and said depositing said film of tungsten silicide occur at a substantially equivalent temperature.

17. The semiconductor manufacturing process as recited in claim 8 and wherein:
said depositing said thin or discontinuous layer of tungsten silicide and said depositing said film of tungsten silicide occur at a substantially equivalent temperature.

18. A process for depositing a tungsten silicide film on a substrate comprising:
depositing a nucleation layer of tungsten silicide (WSi_x) on the substrate using a (CVD) process with a silane (SiH_4) silicon source gas and a reactant gas;
depositing a film of tungsten silicide (WSi_x) on the discontinuous nucleation layer using a (CVD) process by switching to dichlorosilane (SiH_2Cl_2) as a silicon source gas such that the dichlorosilane gas reacts with the reactant gas to form the tungsten silicide film; and

wherein said depositing said nucleation layer of tungsten silicide and said depositing said film of tungsten silicide occur at a substantially equivalent temperature.

19. The process as recited in claim 18 further including:
introducing tungsten hexafluoride (WF_6) as a reactant gas for reaction with the silane and the dichlorosilane.

20. The process as recited in claim 18 further including:
carrying out the (CVD) process in a cold wall (CVD) reaction chamber.

21. The process as recited in claim 18 further including:
carrying out the (CVD) process at a temperature of about 400°C. or less.

22. The process as recited in claim 18 further including:
mixing the silane or dichlorosilane silicon source gas, the reactant gas and a carrier gas in a premix chamber.

23. The process as recited in claim 22 wherein:
a flow rate of the carrier gas is about five to ten times a flow rate of the silane or dichlorosilane silicon source gas.

24. A semiconductor manufacturing process for depositing a tungsten silicide film on a substrate comprising:
depositing a discontinuous nucleation layer of tungsten silicide (WSi_x) on the substrate using a (CVD) process and reacting a silane (SiH_4) silicon source gas with a reactant gas in a CVD system having a premix chamber for combining the silicon source gas and the reactant gas; and
depositing a film of tungsten silicide (WSi_x) on the discontinuous nucleation layer using a (CVD) process by switching to dichlorosilane (SiH_2Cl_2) as a silicon source gas such that the dichlorosilane gas reacts with the reactant gas to form the tungsten silicide film.

25. The semiconductor manufacturing process as recited in claim 24 and wherein:
said depositing said discontinuous nucleation layer of tungsten silicide and said depositing said film of tungsten silicide occur at a substantially equivalent temperature.

26. The semiconductor manufacturing process as recited in claim 24 further including:
introducing tungsten hexafluoride (WF_6) as the reactant gas.

27. The semiconductor manufacturing process as recited in claim 24 further including:
performing the (CVD) process in a cold wall (CVD) system.

28. The semiconductor manufacturing process as recited in claim 27 wherein:

the cold wall (CVD) system includes the premix chamber, a reaction chamber, a graphite boat for holding a plurality of silicon wafers, and means for heating the silicon wafers.

29. The semiconductor manufacturing process as recited in claim 24 wherein:
heating the substrate to a temperature of between about 200° and 500°C., and wherein said substrate comprises a silicon wafer.

30. The semiconductor manufacturing process as recited in claim 24 further including:
depositing of the discontinuous nucleation layer for a timespan between about 1 and 25 seconds.

31. The semiconductor manufacturing process as recited in claim 24 further including:
a carrier gas comprising a mixture of Argon, Nitrogen, and Helium.

32. The semiconductor manufacturing process as recited in claim 31 further including:
introducing the silane silicon source gas at about 400 sccm;
introducing the reactant gas at about 4 sccm; and
introducing a carrier gas at about 2800 sccm.

Add a5]